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Abstract of the Disclosure

A piezoelectric element comprising: a ceramic substrate, a piezoelectric portion made of a piezoelectric ceramic composition containing a $PbMg_{1/3}Nb_{2/3}O_3-PbZrO_3-PbTiO_3$ ternary system solid solution composition having an average particle diameter of $1-10~\mu$ m with a maximum particle diameter being 5 times as large as the average particle diameter or less and being represented by the following general formula (1) as a main component and 0.05 to 10.0 mass% of NiO, and an electrode. The electrode is electrically connected to the piezoelectric portion, and the piezoelectric portion is solidly attached to the ceramic substrate directly or via the electrode.

$$Pb_{r}(Mg_{r/3}Nb_{2/3})_{a}Ti_{b}Zr_{c}O_{3} \qquad (1)$$

wherein $0.95 \le x \le 1.05$; $0.8 \le y \le 1.0$; a, b and c are decimals falling in a range surrounded by (a,b,c) = (0.550, 0.425, 0.025), (0.550, 0.325, 0.125), (0.375, 0.325, 0.300), (0.100, 0.425, 0.475), (0.100, 0.475, 0.425) and (0.375, 0.425, 0.200) in the coordinates with coordinate axes of the a, b and c, and a+b+c = 1.00.